Table IX, Materials, Sampling & Testing Frequency, Highways in US Customary Units **Page 1 of 8**

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Excavation	Acceptance	(6)	Gradation, P.I., Moisture (or visual organic content)	1 per 5,000 C.Y. waste	Number consecutively EX-W-1. No need to test, if waste is designated on plans.
Embankment (4)	Acceptance	(6)	Standard Density	As required by changes in material	Number consecutively BX-SD-1 or EX-SD-1.
			Field Density (1) (4)	1 per 5,000 C.Y. or 1 per 10,000 Tons	Number consecutively BX-D-1 or EX-D-1.
			Gradation, P.I. (5), Deleterious (visual)		Number consecutively BX-G-1 or EX-G-1.
	Independent Assurance	(6)	Standard Density (2)	1 per source	Numbers correspond to acceptance samples
			Field Density, Gradation P.I., Deleterious (visual)	1 per 50,000 C.Y. or 1 per 100,000 Tons	
Bedding & Backfill for Structures: Foundations Fill and Filter Material	Acceptance	(6)	Standard Density	As required by changes in material	
			Field Density (1)	See Note (3)	
			Gradation, P.I. (5), Deleterious (visual)	1 per source or 1 per 500 lineal feet of pipe	

General: Independent Assurance Testing may be waived when Acceptance Testing is performed in DOT&PF Regional Laboratories accredited in the acceptance test method. When DOT&PF Regional Laboratories perform Acceptance Testing, they may also perform the Independent Assurance Testing provided different personnel and equipment is used from that used for the Acceptance Testing.

(1) If material is impractical to test for field density, document quantity and/or area by reporting percent oversize and compactive effort used on a proper density acceptance form.
(2) Required when Standard Density test is run in the field. Copy of field worksheet to be submitted with sample.
(3) One density per concrete structure (manhole, catch basin, inlet, utility vault, abutments, etc.) or pipe and minimum of one density per 100 lineal feet of pipe (i.e. water, sewer, culvert, conduit, etc.) installed. Pipe densities will be taken within 18 inches of the outside diameter of the pipe.
(4) For large unclassified embankments, a field density testing frequency of 1/10,000 C.Y. or 1/20,000 Tons is acceptable subject to the approval of the Quality Assurance/Regional Materials Engineer.
(5) P.I. tests shall be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the assurance samples.
(6) Size of samples for gradation testing is determined by nominal maximum size. See WAQTC FOP for AASHTO T 27/T 11 for minimum sample size. Size of samples for Standard Densities should be four times the size required for gradation testing.

Table IX, Materials, Sampling & Testing Frequency for Highways in US Customary Units

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Aggregate Base Course and Aggregate Surface Course	Quality	150 lbs.	Quality	1 per source prior to use	Allow minimum of 14 day for testing and transport. Number consecutively Q-BC-1 or Q-SC-1
	Acceptance	(5)	Standard Density	As required by changes in material	Number consecutively BC-SD-1 or SC-SD-1
			Field Density	1 per 1,000 C.Y. or 1 per 2,000 Tons	Number consecutively BC-D-1 or SC-D-1
			Gradation, P.I. (3), Fracture (4)		Number consecutively BC-G-1 or SC-G-1
	Independent Assurance	(5)	Standard Density (2)	1 per source	Numbers correspond to Acceptance samples
			Field Density	1 per 10,000 C.Y. or 1 per 20,000 Tons	
			Gradation, P.I., Fracture		
Subbase	Quality	150 lbs.	Quality	1 per source prior to use	Allow minimum 14 days for testing and transport
	Acceptance	(5)	Standard Density	1 per source and as required based on changes in material	Number consecutively SB-SD-1
			Field Density (1)	1 per 2,500 C.Y. or 5,000 Tons	Number consecutively SB-D-1
			Gradation, P.I. (3), Fracture (4)		Number consecutively SB-G-1
	Independent Assurance	(5)	Standard Density (2)	1 per source	Numbers correspond to Acceptance samples
			Field Density	1 per 25,000 C.Y. or 1 per 50,000 Tons	
			Gradation, P.I., Fracture		

(1) If material is impractical to test for field density, document quantity and/or area by reporting percent oversize and compactive effort used on a proper density acceptance form.
(2) Required when Standard Density is run in the field. Copy of the field worksheet to be submitted with sample.
(3) P.I. tests will be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the assurance samples.
(4) Fracture tests will be performed on the first ten samples at the start of production and after each change in material. If these tests indicate the fracture to be 5% or more above specification, additional tests need only be performed on the assurance samples.
(5) Size of samples for gradation testing is determined by nominal maximum size. See WAQTC FOP for AASHTO T 27/T11 for minimum sample size. Size of samples for Standard Densities should be four times the size required for gradation testing.

Table IX, Materials, Sampling & Testing Frequency for Highways in US Customary Units

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Asphalt Treated Base Course	Quality	150 lbs. Aggregate	Quality	1 per source prior to use	Allow minimum of 14 days for testing and transport
	Mix Design (if required)	300 lbs. (4) Aggregate	Mix Design (1)	As required by changes in material	Allow 15 days or contract specified time for design and testing after receiving proposed gradation from contractor
		5 one gal. Cans of AC (5)	0.25 L of Anti-strip to be included (5)		
	Acceptance	(6)	Gradation, Density, Oil Content, P.I., (2) Fracture (3)	1 per 1,000 Tons	See the contract special provisions
	Independent Assurance	(6)	Gradation, Density, Oil Content, Fracture, P.I.	1 per 10,000 Tons	
Emulsified Asphalt Base	See Asphalt Treated Base Course for Submittals and Tests				
Crushed Asphalt Base Course	Acceptance	(6)	Gradation, Density	1 per 5,000 sy	
Asphalt Concrete Pavement and Stone Mastic Asphalt	Quality	150 lbs. Aggregate	Quality	1 per source prior to use	Allow 25 days for testing and transport
	Mix Design	500 lbs. (4) Aggregate	Mix Design (1)	As required by changes in material	Allow 15 days or contract specified time for design and testing after receiving contractor's proposed gradation
		5 one gal. Cans of AC (5)	1 pint of Anti Strip to be included (5)		

(1) Recommendations regarding stripping must be determined for each project.
(2) P.I. tests will be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the assurance samples.
(3) Fracture tests will be performed on the first ten samples at the start of production and after each change in material. If these tests indicate the fracture to be 5% or more above specification, additional tests need only performed on the assurance samples.
(4) Proportion coarse and fine aggregates to the proposed Job Mix Design blend ratio.
(5) Contact the Regional Materials Laboratory to see if submitting the Asphalt Cement or Anti-Strip is necessary.
(6) Size of samples for gradation testing is determined by nominal maximum size. See WAQTC FOP for AASHTO T 27/T 11 for minimum sample size.

Table IX, Materials Sampling & Testing Frequency for Highways in US Customary Units

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Asphalt Concrete Pavement and Stone Mastic Asphalt (continued)	Acceptance	(6)	Gradation, Oil Content, P.I. (4), Fracture (5), Density (3)	1 / 500 Tons (7)	Coating test (AASHTO T-195) required for batch plants
	Independent Assurance	(6)	Gradation, Oil Content P.I., Fracture, Density (3)	1 / 5,000 Tons (8)	
	Information	30 lbs.	3-Marshall Biscuits	1 / Mix Design Minimum	
Asphalt Cement	Quality		Quality		Supplier certification required
	Acceptance	1 Quart	(1)	1 / 50,000 gals. or 1 per 200 Tons	Sampled on project. Test for anti-strip if required by QAE/ME
Liquid Asphalt for: a. Tack coat b. Prime coat c. Seal coat d. Surface Treatment	Quality		Quality		Supplier certification required
	Acceptance	1 Gal. in plastic or glass jug	(1)	1 / 50,000 gals. or 1 per 200 Tons	Sample must be tested by Lab that did not test material for Quality. Material sampled prior to dilution
Cover coat material for surface treatment	Quality	65 lbs. Aggregate	Quality (2)	1 per source prior to use	Allow 25 days for testing and transport
	Acceptance	(6)	Gradation, Fracture (5)	1 / 500 Tons	May be taken from stockpile or production
	Independent Assurance	(6)	Gradation, Fracture	1 / 5,000 Tons	

(1) Refer to project specifications.

(2) Recommendations regarding aggregate stripping will be included on this report.

(3) Refer to project Special Provisions to determine the frequency of density testing. (Assurance test at 1 per 10 Acceptance tests.)

(4) P.I. tests will be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the assurance samples.

(5) Fracture tests will be performed on the first ten samples at the start of production and after each change in material. If these tests indicate the fracture to be 5% or more above specification, additional tests need only be performed on the assurance samples.

(6) Size of samples for gradation testing is determined by nominal maximum size. See the specified test method for minimum sample size.

(7) For sidewalks, medians, and other untrafficed areas the hot asphalt acceptance sampling and testing frequency will be 1 per 1,000 Tons or 1 per 10,000 sy.

(8) For sidewalks, medians, and other untrafficed areas the hot asphalt concrete independent assurance sampling and testing frequency will be 1 per 10,000 Tons or 1 per 100,000 sy.

Table IX, Materials, Sampling & Testing Frequency for Highways in US Customary Units

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Open Graded Asphalt Pavement	See Hot Asphalt Pavement for Submittals and Tests				
Concrete (a) Cement (b) Water (c) Coarse Aggregate (d) Fine Aggregate (e) Air entraining agent (f) Joint Sealer (g) Joint Filler (h) Curing materials	Quality (a thru h)	(a) 10 lbs. in can	Quality	Approved manufacturer or 1 per shipment	Allow 40 days for testing and transport. Manufacturer's certification required. (1)
		(b) ½ gal. in glass jar	Quality	1 per source	Allow 20 days for testing or potable water accepted by Project Engineer
		(c) 100 lbs.	Quality	1 per source	Allow 25 days for testing and transport
		(d) 25 lbs.	Quality	1 per source	Allow 25 days for testing and transport
		(e) 1 Quart	Quality	1 per shipment	Project Engineer documentation if approved brand in lieu of testing.
		(f) See remarks	Quality		Approved certification in lieu of testing.
		(g,h) 1 Quart for each liquid component. If solid see remarks	Quality	1 per type	Project Engineer documentation if an approved brand. If an unapproved brand, manufacturer's certification required or sample for testing.
	Mix Design (2)	Aggregate: Coarse: 330 lbs. Fine: 110 lbs. Cement: 1 sack	Mix Design	1 per source prior to use	Contractor furnished material. Allow 45 days for testing and transport

(1) Cement stored in silos or bins over six months, or in bags over two months, will require re-testing.
(2) Concrete Plant inspection must be completed prior to production.

Table IX, Materials, Sampling & Testing Frequency for Highways in US Customary Units

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Concrete Continued:					
Coarse Aggregate	Acceptance (5)	(4)	Gradation	1 per 100 Cubic Yards	Number consecutively CA-G-1
Fine Aggregate		(4)	Gradation, Fineness Modulus	1 per 100 Cubic Yards	Number consecutively FA-G-1
Mix		As required	Yield, Cement factor, Slump, Water cement Ratio, % air	1 per ½ days pour (1) or 1 per 50 Cubic Yards	(2)
		2 cylinders or beams	Compressive strength or Flexural strength (3)	1 per ½ days pour (1) or 1 per 50 Cubic Yards	Test at 28 days. (2) (6)
	Information	Cylinders or beams	Compressive strength or Flexural strength (3)	As required (e.g. for 7 day break)	
Coarse Aggregate	Independent Assurance	(4)	Gradation, all Deleterious	1 per 1,000 Cubic Yards with minimum of 1 per project if over 100 Cubic Yards is placed	Numbers correspond to acceptance samples
Fine Aggregate		(4)	Gradation, all Deleterious, Fineness Modulus		
Mix		As required	Yield, Cement factor, Slump, Water cement Ratio, % air	1 per 1,000 Cubic Yards	
		2 cylinders or beams	Compressive strength or Flexural strength (3)	1 per 1,000 Cubic Yards	
Prestressed Concrete Girder	Quality	Refer to Concrete for approval of specific components			
Grout		To be submitted by the contractor for approval. See standard contract specifications.			

(1) Half day's pour considered to be 6 hours or less.
(2) Commercial sources, which are periodically inspected, do not have to be tested if total quantity of concrete placement is less than 5 cubic yards as determined by the Project Engineer. Placement reports summarizing all minor pours will be completed.
(3) Only required when strength criteria is included for the item.
(4) Size of samples for gradation testing is determined by nominal maximum size. See WAQTC FOP for AASHTO T 27/T11 for minimum sample size.
(5) Truck inspections are required for each pour.
(6) Non-structural or minor concrete construction, 1 set minimum per project is recommended.

Table IX, Materials, Sampling & Testing Frequency for Highways in US Customary Units

Material	Type of Sample	Sample Size	Type of Tests	Frequency	Remarks
Misc. Hardware	Quality	See contract special provisions, Project Engineer's inspection and acceptance			Certs/Mill reports approved by QA/ME or SME
Concrete Reinforcing Steel	Quality	2 pieces 1 yard long per size and grade		1 per 20 Tons minimum 1 per project when a pay item	Mill reports approved by QA/ME or SME in lieu of testing or QPL
Structural Steel	Quality	Inspection, mill reports, and certifications approved by SME. (1)			
Piling	Quality	Inspection test reports and/or certificates approved by SME. (1)			
Porous backfill	Quality		Standard Density	As required by changes in material	Number consecutively PB-SD-1
	Acceptance		Density	1 per installation	Number consecutively PB-D-1
		(2)	Gradation	1 per source	Number consecutively PB-G-1
Riprap	Quality	125 lbs.	Quality	1 per source prior to use	Allow 25 days for testing and transport
	Acceptance	5 cy min.	Gradation count	1 per source for each class	
Topsoil	Quality	15 lbs.	Organic content, Gradation, pH	1 per source prior to use	Allow 15 days for testing and transport
	Acceptance	(2)	Gradation	1 per 2,500 Cubic Yards	Number consecutively TS-G-1
Signals and Lighting		Within 30 days following award of the contract, the contractor shall submit to the Project Engineer for approval a complete list of material and equipment that is proposed to be used for this item. The data shall include catalogue cuts, diagrams, test reports, manufacturers' certifications, etc. The above data shall be submitted in eight sets. Any proposed deviation from the plans shall also be submitted.			

(1) Reports to include heat numbers, fabrication date, physical and chemical properties.
(2) Size of samples for gradation testing is determined by nominal maximum size. See WAQTC FOP for AASHTO T 27/T11 for minimum sample size. Size of samples for Standard Densities should be four times the size required for gradation testing.

Minor Quantities

A. Portland Cement Concrete. Concrete for the following items may be accepted on the basis of an approved mix design and placement reports documenting batch information and pour location, time, and quantity. Under this system arrangements should be made for the producer to state on the delivery ticket accompanying each load of concrete, the class of concrete being furnished, the weights of cement, aggregates and water used in the batch, and the time of batching. Only State-tested aggregates and cement, or supplier certified cement, approved by the State Materials Engineer, may be used. Each pour must be documented on a Concrete Placement Report.

1. Sidewalks—Not to exceed approximately 150 Square Yards per day.
2. Curb and gutter not to exceed approximately 250 lineal feet per day.
3. Slope paving and headers.
4. Paved ditch.
5. Guardrail anchorages.
6. Small culvert headwalls.
7. Fence post footings.
8. Catch basins, manhole bases, and inlets.

B. Small Quantities of Miscellaneous Materials. The primary documentation of delivery and placement may be the Project Materials Report.

1. Aggregates—Not to exceed 500 Tons per item per project.
2. Asphalt/Aggregate Mixtures—Not to exceed 1,500 Tons per approved mix design.
3. Bituminous Material—Not to exceed 85 Tons per project.
4. Paint—Not to exceed 20 Gallons per project. Acceptance to be based on weights and analysis on the container label.
5. Lumber—(Recognized commercial grades only may be used) Not to exceed 5,000 Board Feet per project.
6. Masonry Items—Subject to checking of nominal size and visual inspection. Not to exceed 100 pieces.
7. Plain concrete or clay pipe—100 lineal feet.
8. Hardware—When a minor component to other small quantities of work.
9. Topsoil—Not to exceed 6,000 square feet.